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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/566,158

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Shinichi Igarashi

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EXAMINER

SMYTH, ANDREW P

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/566,158	Applicant(s) IGARASHI ET AL.	
	Examiner ANDREW SMYTH	Art Unit 2881	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 5 is/are allowed.
- 6) ☒ Claim(s) 1-4 and 6-19 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01/27/2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Allowable Subject Matter

1. Claim 5 is allowed.
2. The configuration was not found in a prior art search.

The search failed to show or suggest the prior use of:

From independent claim 5. A two-dimensional patterning method,
... forming a film on the surface from which the blister has been destroyed and removed with the use of difference in adsorption probability between the substrate surface protected by the blister and the surface not protected.

3. The following is a listing/ statement of reasons for the indication of allowable subject matter:

From independent claim 5. A two-dimensional patterning method, wherein a two-dimensional pattern is formed by forming a film on a blister disposed on a substrate and destroying and removing the blister together with the formed film by electron irradiation or ion irradiation, and further by forming a film on the surface from which the blister has been destroyed and removed with the use of difference in adsorption probability between the substrate surface protected by the blister and the surface not protected

Claim Rejections - 35 USC § 112

1. Claims 4, 9-10, and 12-17 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
2. Regarding claim 4, the phrase " two-dimensional pattern of a non-reacted clean surface is formed " is indefinite.
3. Regarding claim 9, the phrase "patterned configuration " is indefinite.
4. Regarding claim 10, the phrase "patterned configuration " is indefinite.
5. Regarding claim 12, the phrase " is a pattern of an atomic species of a surface constituent atom " is indefinite.
6. Regarding claim 13, the phrase " is a pattern different in film formed in a lower layer than a surface layer " is indefinite.
7. Regarding claim 14, the phrase " electric characteristic pattern" is indefinite.
8. Regarding claim 15, the phrase " reactive pattern" is indefinite.
9. Regarding claim 16, the phrase " affinity pattern" is indefinite.
10. Regarding claim 17, the phrase " hydrophilic or hydrophobic pattern" is indefinite.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 2-3, 7, and 18-19 are rejected under 35 U.S.C. 102(b) as being anticipated by Nishioka (US 4,843,238).

Nishioka discloses the following:

Regarding applicant's claim 2. A two-dimensional patterning method, wherein a two-dimensional pattern (inherent in the method of reference) is formed by destroying a blister (300) disposed on a substrate (100) by ion irradiation (figure 1D-1E; 300, abstract) (column 4, lines 22-46).

Regarding applicant's claim 3. A two-dimensional patterning method, wherein a two-dimensional pattern of a uncoated clean surface is formed by forming a film (200) on a blister (300) disposed on a substrate (100) and destroying and removing the blister together with the formed film by electron irradiation or ion irradiation (column 4, lines 22-46).

Regarding applicant's claim 7. The two-dimensional patterning method according to claim 1, wherein the substrate is a silicon substrate or a metal substrate (column 4, lines 26-30).

Regarding applicant's claim 18. A manufacturing method of electronic device, wherein the two-dimensional patterning method according to claim 1 is employed.

Regarding applicant's claim 19. A manufacturing method of magnetic device, wherein the two-dimensional patterning method according to claim 1 is employed.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

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invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1, 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nishioka (US 4,843,238) in light of Livesay (US 6,407,399).

Regarding applicant's claim 1, Nishioka discloses: a two-dimensional patterning method, wherein a two-dimensional pattern is formed (inherent in the method of reference) by destroying a blister (300) disposed on a substrate (100) by electron irradiation.

However, Nishioka lacks: by electron irradiation.

Livesay teaches: destroying a blister disposed on a substrate by electron irradiation (column 7, line 60 to column 8, line 14).

Regarding applicant's claim 6, Nishioka discloses: destroying and removing the blister together with the reacted film by electron irradiation or ion irradiation.

However, Nishioka lacks: wherein a two-dimensional pattern is formed by executing surface reaction on a blister disposed on a substrate and

executing chemical reaction on the surface from which the blister has been destroyed and removed with the use of difference in reactivity between the substrate surface protected by the blister and the surface not protected.

Livesay teaches: wherein a two-dimensional pattern is formed by executing surface reaction on a blister disposed on a substrate and

executing chemical reaction on the surface from which the blister has been destroyed and removed with the use of difference in reactivity between the substrate

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surface protected by the blister and the surface not protected (column 7, line 60 to column 8, line 14).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the elements of two-dimensional patterning method , as disclosed by Nishioka , with destroying a blister disposed on a substrate by electron irradiation and also executing surface reaction on a blister disposed on a substrate and executing chemical reaction on the surface from which the blister has been destroyed and removed with the use of difference in reactivity between the substrate surface protected by the blister and the surface not protected , as taught by Livesay, to utilize as a beam type for blister removal and also for reprocessing the substrate surfaces post blister removal and film layer disruption due to removal.

5. Claim 8 rejected under 35 U.S.C. 103(a) as being unpatentable over Nishioka (US 4,843,238) in light of Simpson et al. (US 6,225,193) .

Regarding applicant's claim 8 , Nishioka discloses: The two-dimensional patterning method according to claim 1, wherein the blister is formed by ion irradiation (column 1, lines 7-14).

However, Nishioka lacks: hydrogen ion irradiation, deuterium ion irradiation, or helium ion irradiation.

Simpson teaches: hydrogen ion irradiation or helium ion irradiation (abstract)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the elements of a blister is formed by ion irradiation , as disclosed by Nishioka , with hydrogen ion irradiation or helium ion irradiation , as taught by Simpson, to utilize as a known type of ion beam.

1. Claim 11 rejected under 35 U.S.C. 103(a) as being unpatentable over Nishioka (US 4,843,238) in light of Li (US 7,038,290) .

Regarding applicant's claim 11 , Nishioka discloses: The two-dimensional patterning method according to claim 2.

However, Nishioka lacks: The two-dimensional patterning method according to claim 2, wherein the irradiation ion is any one of Ar⁺, Kr⁺, and Xe⁺.

Li teaches: wherein the irradiation ion is any one of Ar⁺, Kr⁺, and Xe⁺ (column 24, lines 5-15).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the elements of two-dimensional patterning method , as disclosed by Nishioka , with irradiation ion is any one of Ar⁺, Kr⁺, and Xe⁺ , as taught by Li, to utilize as a known type of ion beam.

Conclusion

1. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Pertinent prior art is closely related art that individually or in combination could be considered grounds for rejection. See references cited for a listing of the pertinent prior art found and the prior art found.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew Smyth whose telephone number is 571-270-1746. The examiner can normally be reached on 7:30AM - 5:00PM; Monday thru Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Kim can be reached on 571-272-2293. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jack I. Berman/
Primary Examiner, Art Unit 2881
/A. S./
Examiner, Art Unit 2881